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Psychiatry, Epidemiology,  
Ethics, Patient Safety

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# **USMLE<sup>®</sup> Step 2 CK: Psychiatry, Epidemiology, Ethics, Patient Safety**

Lecture Notes

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Part I

# Psychiatry



# Mental Status Examination

## Learning Objectives

- List the steps required to perform a mental status examination
- 

The mental status examination is used to describe the clinician's observations and impressions of the patient during the interview. In conjunction with the history of the patient, it is the best way to make an accurate diagnosis.

## General Description

- **Appearance:** grooming, poise, clothes, body type (disheveled, neat, childlike, etc.)
- **Behavior:** quantitative and qualitative aspects of the patient's motor behavior (restless, tics, etc.)
- **Attitude toward the examiner:** (cooperative, frank, and seductive)

## Mood and Affect

- **Mood:** emotions perceived by the patient (depressed, anxious, angry, etc.)
- **Affect:** patient's present emotional responsiveness (blunted, flat, labile, etc.)
- **Appropriateness:** in reference to the context of the subject (appropriate or inappropriate)

**Speech:** physical characteristics of speech (relevant, coherent, fluent, etc.)

**Perceptual disturbances:** experienced in reference to self or the environment (hallucinations, illusions)

- Hallucinations: false sensory perceptions without a stimulus: **auditory** (psychotic disorders), **visual** (drugs, organic diseases), **tactile** (cocaine

- intoxication, alcohol withdrawal), **olfactory** (seizures)
- Illusions: sensory misperception with a stimulus

## **Thought**

- **Form of thought:** way in which a person thinks (flight of ideas, loose associations, tangentiality, circumstantiality, etc.)
- **Content of thought:** what the person is actually thinking about (delusions, paranoia, and suicidal ideas)

## **Sensorium and Cognition**

- Alertness and level of consciousness (awake, clouding of consciousness, etc.)
- Orientation: time, place, and person
- Memory: recent, remote, recent past, and immediate retention and recall
- Concentration and attention: serial sevens, ability to spell backwards.
- Capacity to read and write: Ask patient to read a sentence and perform what it says.
- Visuospatial ability: copy a figure
- Abstract thinking: similarities and proverb interpretation
- Fund of information and knowledge: calculating ability, name past presidents

**Impulse Control:** estimated from history or behavior during the interview

**Judgment and Insight:** ability to act appropriately and self-reflect

**Reliability:** physician's impressions of the patient's ability to accurately assess his situation

## **Interviewing Techniques**

**Open-Ended Questions :** Allow the patient to speak in his own words as much as possible.

“Can you describe your pain?”

**Closed-Ended Questions** : Ask for specific information without allowing options in answering.

“Are you hearing voices?”

**Facilitation** : Help the patient continue by providing verbal and nonverbal cues.

“Yes, please continue.”

**Confrontation** : Point something out to the patient.

“You seem very upset today.”

**Leading**: Provide the answer in the question.

“Are the voices telling you to hurt yourself?”

# Defense Mechanisms

## Learning Objectives

- List the types of defense mechanisms and the situations in which they are most likely to occur
  - Describe the most common psychological and intelligence tests and their purpose
- 

**Id:** Drives (instincts) present at birth. The 2 most important drives are sex and aggression.

**Ego:** Defense mechanisms, judgment, relationship to reality, object relationships, developed shortly after birth

**Superego:** Conscience, empathy, and morality are formed during latency period, right vs. wrong

# Childhood Disorders

## Learning Objectives

- Describe the degrees of intellectual disability and expected level of function
  - List the different types of learning disorders
  - Describe the presentation of autism spectrum disorder
  - Describe the diagnosis and treatment of childhood disorders likely to present to a psychiatrist, including attention deficit hyperactivity disorder, childhood conduct disorder, oppositional defiant disorder, childhood anxiety, and Tourette syndrome
  - List the approaches to treating childhood enuresis
- 

## Intellectual Disability (ID)

**Definition.** Formerly called mental retardation. Significantly subaverage intellectual function (IQ <70), as measured by a variety of IQ tests. Must be accompanied by concurrent impairment in adapting to demands of school, work, social, and other environments. Onset is age <18.

**Risk Factors/Etiology.** Associated genetic and chromosomal abnormalities include inborn errors of metabolism (e.g., lipidoses, aminoacidurias, glycogen storage diseases) and chromosomal abnormalities (e.g., cri du chat, Down, fragile X syndromes). Associated intrauterine infections include rubella, cytomegalovirus, and other viruses. Intrauterine exposure to toxins and other insults such as alcohol, hypoxia, or malnutrition may be causal. Postnatal causes include exposure to toxins and infection, poor prenatal care, postnatal exposure to heavy metals, physical trauma, and social deprivation.

### Presenting Symptoms

- **Prevalence:** 1% of the population. Occurs at a 1.2:1 male-to-female ratio.
- **Mild ID (IQ 50–69):** Attain academic skills to approximately the sixth-grade level, often live independently in the community or with minimal supervision, may have problems with impulse control and self-esteem, and may have associated conduct disorder, substance-related disorder, or attention deficit hyperactivity disorder.
- **Moderate ID (IQ 35–50):** Attain academic skills to second-grade level, may be able to manage activities of daily living, work in sheltered workshops, live in residential community settings; have significant problems conforming to social norms (those with Down’s syndrome are at high risk for early development of Alzheimer’s).
- **Severe (IQ 20–35) and profound ID (IQ <20):** Have little or no speech and very limited abilities to manage self-care; require highly supervised care setting.

**Physical Examination.** Evidence of underlying disorder or injury.

**Diagnostic Tests.** Amniocentesis: May reveal chromosomal abnormalities associated with ID in high-risk pregnancies (mother age >35).

**Treatment.** Primary prevention includes genetic counseling, good prenatal care, and safe environments. Treatment of associated general medical conditions may improve overall level of cognitive and adaptive function. Special education techniques may improve ultimate level of function. Behavioral guidance and attention to promoting self-esteem may improve long-term emotional adjustment.

**Differential Diagnosis.** Includes learning and communication disorders, sensory impairment, autism spectrum disorder, borderline intellectual functioning (IQ 70–100), and environmental deprivation.



# Depressive, Bipolar, and Related Disorders

## Learning Objectives

- List the diagnostic criteria and treatment approaches for major mood disorders, including major depressive, bipolar, cyclothymic, and persistent depressive disorders
  - Describe the presentation of mood disorders related to triggering phenomenon, including seasonal pattern, grief, peri/postpartum, and death/dying
- 

## Major Depressive Disorder (Major Depression)

A 70-year-old woman was recently admitted after her son informed the doctor that she had been doing very poorly over the past few months. The patient reports a 30-pound weight loss, decreased concentration, feelings of helplessness and hopelessness, decreased energy, depressed mood, and decreased sleep.

**Definition.** Mood disorder that presents with at least a 2-week course of symptoms that is a change from the patient's previous level of functioning. Must have depressed mood or anhedonia (inability to enjoy oneself).

**Risk Factors/Epidemiology.** Major depression is seen more frequently in women due to several factors, such as hormonal differences, great stress, or simply a bias in the diagnosis. The typical age of onset is age 40. There is also a higher incidence in those who have no close interpersonal relationships or are divorced or separated. Many studies have reported abnormalities in serotonin,

norepinephrine, and dopamine. Other risk factors include family history, exposure to stressors, and behavioral reasons, such as learned helplessness.

## Presenting Symptoms

- Depressed mood most of the day
- Anhedonia during most of the day
- Significant weight loss (>5% of body weight)
- Insomnia
- Psychomotor agitation or retardation
- Fatigue or loss of energy nearly every day
- Feelings of worthlessness or guilt
- Diminished ability to concentrate
- Recurrent thoughts about death

**Physical Examination.** Usually within normal limits; however, may find evidence of psychomotor retardation, such as stooped posture, slowing of movements, slowed speech, etc. May also find evidence of cognitive impairment, such as decreased concentration and forgetfulness.

## May also include:

- **Psychotic features:** worse prognosis
- **Atypical features:** increased weight, appetite, and sleep

**Treatment.** Must first secure the safety of the patient, given that suicide is such a high risk. Pharmacotherapy includes antidepressant medications such as SSRIs, Tricyclic antidepressants (TCAs), or monoamine oxidase inhibitors (MAOIs). Electroconvulsive therapy (ECT) may be indicated if patient is suicidal or intolerant to medications. Individual psychotherapy is indicated to help the patient deal with conflicts, sense of loss, etc. Another form of therapy is cognitive therapy, which will change the patient's distorted thoughts about self, future, world, etc.

## Differential Diagnosis

- **Medical disorders:** hypothyroidism, Parkinson's disease, dementia, medications such as hypertensives, pseudodementia, tumors, cerebrovascular accidents

- **Mental disorders:** other mood disorders, substance disorders, and grief

# Schizophrenia and Other Psychotic Disorders

## Learning Objectives

- List the diagnostic criteria and treatment approaches to schizophrenia and other psychotic disorders
- 

## Schizophrenia

**Definition.** Schizophrenia is a thought disorder that impairs judgment, behavior, and ability to interpret reality. Symptoms must be present for at least 6 months to be able to make a diagnosis.

**Risk Factors/Etiology.** Men have an earlier onset, usually at age 15–25. Many theories have evolved regarding the cause of schizophrenia.

- Schizophrenia has been associated with high levels of dopamine and abnormalities in serotonin.
- Because there is an increase in the number of schizophrenics born in the winter and early spring, many believe it may be viral in origin.

Schizophrenia is more prevalent in low socioeconomic status groups, either as a result of downward drift or social causation.

### Prevalence

General population.....	1%	One schizophrenic parent.....	12%
Monozygotic twin.....	47%	Two schizophrenic parents .....	40%
Dizygotic twin.....	12%	First-degree relative.....	12%

Second-degree relative ..... 5–6%

## Physical and Psychiatric Presenting Symptoms

- Hallucinations (mostly auditory)
- Delusions (mostly bizarre)
- Disorganized speech or behavior
- Catatonic behavior
- Negative symptoms
- Social and/or occupational dysfunction
- Physical exam usually unremarkable, but may find saccadic eye movements, hypervigilance, etc.

## Brain Imaging Findings

- **CT:** lateral and third **ventricular enlargement, reduction in cortical volume** (associated with the presence of negative symptoms, neuropsychiatric impairment, increased neurologic signs, and poor premorbid adjustment)
- **MRI:** increased cerebral ventricles
- **PET:** hypoactivity of the frontal lobes and hyperactivity of the basal ganglia relative to the cerebral cortex

## Psychologic Tests

- *IQ tests:* Will score lower on all IQ tests, maybe due to low intelligence at the onset or to deterioration as a result of the disease
- **Neuropsychologic:** Tests usually are consistent with bilateral frontal and temporal lobe dysfunction, including deficits in attention, retention time, and problem-solving ability.
- **Personality:** may give abnormal findings, such as bizarre ideations, etc.

**Treatment.** Hospitalization is usually recommended for either stabilization or safety of the patient. If you decide to use medications, antipsychotic medications are most indicated to help control both positive and negative symptoms. If no response, consider using clozapine after other medications have failed. The suggested psychotherapy will be supportive psychotherapy with the primary aim

of having the patient understand that the therapist is trustworthy and has an understanding of the patient, no matter how bizarre.

## **Differential Diagnosis**

- **Substance-induced:** Psychostimulants, hallucinogens, alcohol hallucinosis, barbiturate withdrawal, etc. Consider urine drug screen to rule out.
- **Epilepsy:** temporal lobe epilepsy
- **Other psychotic disorders:** schizoaffective, schizophreniform, brief reactive psychosis, delusional disorder
- **Malingering and factitious disorder:** must assess whether the patient is in control of the symptoms and whether there is an obvious gain
- **Mood disorders:** Look at duration of mood symptoms; these tend to be brief in schizophrenia.
- **Medical:** HIV, steroids, tumors, CVAs, etc. Need medical work-up to rule out.
- **Personality disorders:** Schizotypal, schizoid, and borderline personality disorders have the most similar symptoms. Must look at duration of symptoms as well as patient's level of functioning.



# Anxiety Disorders

## Learning Objectives

- Describe the presentation, diagnostic criteria, and treatment approaches to anxiety disorders, including panic, phobic, obsessive-compulsive, acute stress, post-traumatic stress, and generalized anxiety disorders
- 

## Anxiety

Anxiety is a syndrome with psychologic and physiologic components. Psychologic components include worry that is difficult to control, hypervigilance and restlessness, difficulty concentrating, and sleep disturbance. Physiologic components include autonomic hyperactivity and motor tension.

**Psychodynamic theory** posits that anxiety occurs when instinctual drives are thwarted. **Behavioral theory** states that anxiety is a conditioned response to environmental stimuli originally paired with a feared situation. **Biologic theories** implicate various neurotransmitters (especially gammaaminobutyric acid [GABA], norepinephrine, and serotonin) and various CNS structures (especially reticular activating system and limbic system).

# Somatic Symptom and Related Disorders

## Learning Objectives

- Differentiate conversion disorder, factitious disorder, and malingering
  - Answer questions about somatic symptom, illness anxiety, and body dysmorphic disorders
- 

## Somatoform Disorders

Somatoform disorders are characterized by the presentation of physical symptoms with no medical explanation. The symptoms are severe enough to interfere with one's ability to function in social or occupational activities.

# Neurocognitive Disorders

## Learning Objectives

- Differentiate delirium, dementia, and psychosis
  - List the causes of delirium and describe the diagnostic work-up
  - Define neurocognitive disorder and mild neurocognitive disorder
- 

# Neurocognitive Disorders

Cognition includes memory, language, orientation, judgment, problem solving, interpersonal relationships, and performance of actions. Cognitive disorders have problems in these areas as well as behavioral symptoms.

**Definition.** Characterized by the syndromes of delirium, neurocognitive disorder, and amnesia, which are caused by general medical conditions, substances, or both.

**Risk Factors/Etiology.** Very young or advanced age, debilitation, presence of specific general medical conditions, sustained or excessive exposure to a variety of substances.

## Presenting Symptoms (Key Symptoms)

- Memory impairment, especially recent memory
- **Aphasia:** failure of language function
- **Apraxia:** failure of ability to execute complex motor behaviors
- **Agnosia:** failure to recognize or identify people or objects
- **Disturbances in executive function:** impairment in the ability to think abstractly and plan such activities as organizing, shopping, and maintaining a home

# Dissociative Disorders

## Learning Objectives

- Define depersonalization and derealization
  - Describe the presentation of dissociative amnesia with and without fugue
  - Recognize dissociative identity disorder
- 

## Dissociation

Dissociation is the fragmentation or separation of aspects of consciousness, including memory, identity, and perception. Some degree of dissociation is always present; however, if an individual's consciousness becomes too fragmented, it may pathologically interfere with the sense of self and ability to adapt. Presenting complaints and findings of dissociative disorders include amnesia, personality change, erratic behavior, odd inner experiences (e.g., flashbacks, déjà vu), and confusion.

# Adjustment Disorders

## Learning Objectives

- Recognize and describe treatment approaches to adjustment disorders
- 

## Adjustment Disorders

Adjustment disorders are maladaptive reactions to an identifiable psychosocial stressor. They are caused by environmental stressors having an effect on functioning. The risk that a stressor will cause an adjustment disorder depends on one's emotional strength and coping skills.

**Prevalence.** Extremely common; all age groups

Onset is typically within 3 months of the initial presence of the stressor, and it lasts  $\leq 6$  months once the stressor is resolved. If the stressor continues and new ways of coping are not developed, it can become chronic.

**Key Symptoms.** Complaints of overwhelming anxiety, depression, or emotional turmoil associated with specific stressors

**Associated Problems.** Social and occupational performance deteriorate; erratic or withdrawn behavior

**Treatment .** Remove or ameliorate the stressor.

- Brief psychotherapy to improve coping skills
- Pharmacotherapy: Anxiolytic or antidepressant medications are used to ameliorate symptoms if therapy is not effective.

**Differential Diagnosis.** Normal reaction to stress. Disorders that occur following stress (e.g., GAD, PTSD, major depressive disorder).

**Types .**

- Depressed mood
- Anxiety
- Mixed anxiety and depressed mood
- Disturbance of conduct
- Mixed disturbance of emotions and conduct



# Substance-Related and Addictive Disorders

## Learning Objectives

- Describe the neuroanatomy of substance-related and addictive disorders
  - Present the epidemiology of addictive disorders
  - Describe the behavioral and pharmacologic approaches to treating addicts
- 

## Substance Abuse and Addiction

### Definitions

- **Substance use disorder:** negative behavioral, cognitive, and/or physiologic symptoms due to use of a substance, yet use continues despite these adverse consequences
- **Intoxication:** reversible substance-specific syndrome due to recent use of a substance
- **Withdrawal:** substance-specific behavioral, cognitive, and/or physiologic change due to the cessation or reduction in heavy or prolonged substance use

### Physical and Psychiatric Examination

- **Substance abuse history:** includes the substance(s) used, dosage(s), effects, duration and social context of use, and prior experiences with substance detoxification, rehabilitation, and relapse prevention
- **Medical history:** includes complications of substance abuse
- **Psychiatric history:** includes other primary psychiatric diagnoses and past treatments

- **Mental status examination:** includes signs of substance-induced disorders
- **Physical examination:** includes signs of substance use

### Risk Factors/Etiology

- **Family history:** Biological sons of alcoholics are more likely to develop alcoholism than the general population.
- **Physiology:** Individuals who are innately more tolerant to alcohol may be more likely to develop alcohol abuse.
- **Developmental history:** poor parenting, childhood physical or sexual abuse, and permissive attitudes toward drug use
- **Environmental risk factors:** exposure to drug use through peers or certain occupations, economic disadvantage, and social isolation
- **Psychiatric disturbances:** conduct disorder, ADHD, depression, and low self-esteem
- **Self-medication hypotheses:** Individuals with certain psychologic problems may abuse substances in an effort to alleviate symptoms (e.g., a person suffering from an anxiety disorder uses alcohol to decrease innate anxiety).

### Diagnostic Tests

- **CAGE.** Affirmative answers to any 2 of the following questions (or to the last question alone) are suggestive of alcohol abuse:
  - Have you ever felt that you should cut down your drinking?
  - Have you ever felt annoyed by others who have criticized your drinking?
  - Have you ever felt guilty about your drinking?
  - Have you ever had a morning drink (eye-opener) to steady your nerves or alleviate a hangover?
- **Urine drug screen:** typically tests for amphetamines, barbiturates, benzodiazepines, cannabinoids, cocaine, methadone, methaqualone, opiates, phencyclidine
- **Hair testing:** typically tests for cocaine, amphetamines, methamphetamines, opiates, PCP, marijuana
- **Breath:** typically tests for alcohol
- **Blood:** increased AST, ALT, and GGT for alcohol abuse

## Types of treatment

- **Pharmacotherapy:** medications that work on the reward center, such as naltrexone, varenicline, and bupropion
- **Psychotherapy:** preferably group therapy such as Alcoholics Anonymous, Narcotics Anonymous
- **Behavioral modification techniques:** disulfiram (aversive conditioning), patch, gum, inhaler (fading)
- **Detoxification units:** typically 5-10 days, provide medications to assure safe withdrawal from substances
- **Rehabilitation programs:** typically 28-day programs, learn about relapse prevention and identification of triggers

Table I-11-1. Blood Alcohol Levels and Effects on Behavior

Blood Alcohol Level	Behavioral Effect
0.05%	Thought, judgment, and restraint are loosened and disrupted
0.1%	Motor actions become clumsy
0.2%	<ul style="list-style-type: none"> <li>• Motor area of the brain is depressed</li> <li>• Emotional behavior is affected</li> </ul>
0.3%	Confused or stuporous
0.4–0.5%	<ul style="list-style-type: none"> <li>• Coma</li> <li>• At higher levels, death may occur due to respiratory depression</li> </ul>

Table I-11-2. Substances of Abuse

Substance	Signs and Symptoms of Intoxication	Treatment of Intoxication	Signs and Symptoms of Withdrawal
1. Alcohol	1. Talkativeness, sullenness, gregariousness, moodiness, etc.	1. Mechanical ventilation, if severe	1. Tremors, hallucinations, seizures, delirium, tremors

1. Amphetamines, cocaine	1. Euphoria, hypervigilance, autonomic hyperactivity, weight loss, papillary dilatation, perceptual disturbances	1. Short-term use of antipsychotics, benzodiazepines, vitamin C to promote excretion in urine, anti-hypertensives	1. Anxiety, tremulousness, headache, increased appetite, depression, risk of suicide
1. Anabolic steroids	1. Irritability, aggression, mood changes, psychosis, heart problems, liver problems, etc.	1. Symptomatic, abstinence	1. Depression, risk of suicide
1. Bath salts	1. Headache, palpitations, hallucinations, paranoia, violence, increased heart rate and blood pressure	1. Supportive, benzodiazepines	1. Unknown
1. Benzodiazepines	1. Inappropriate sexual or aggressive behavior, impairment in memory or concentration	1. Flumazenil	1. Autonomic hyperactivity, tremors, insomnia, seizures, anxiety

1. Cannabis	1. Impaired motor coordination, slowed sense of time, social withdrawal, conjunctival injection, increased appetite, dry mouth, tachycardia	1. None	1. None
1. Ecstasy	1. Euphoria, mild psychedelia, hyponatremia, seizures, death, rhabdomyolysis, increased heart rate, blood pressure, and temperature	1. Cyproheptadine, benzodiazepines, dantrolene	1. Unknow
1. Hallucinogens	1. Ideas of reference, perceptual disturbances, impaired judgment, dissociative symptoms, pupillary dilatation, tremors, incoordination	1. Supportive counseling (talking down), antipsychotics, benzodiazepines	1. None
	1. Belligerence,		

1. Inhalants	<p>apathy,  assaultiveness,  impaired  judgment,  blurred vision,  stupor or coma</p>	<p>1. Antipsychotics if  delirious or  agitated</p>	<p>1. None</p>
1. Opiates	<p>1. Apathy,  dysphoria,  papillary  constriction,  drowsiness,  slurred speech,  impairment in  memory, coma  or death</p>	<p>1. Naloxone</p>	<p>1. Fever, chills,  lacrimation,  runny nose,  abdominal  cramps,  muscle  spasms,  insomnia,  yawning</p>
1. Phencyclidine (PCP)	<p>1. Belligerence,  assaultiveness,  psychomotor  agitation,  nystagmus,  hypertension,  seizures, coma,  hyperacusis</p>	<p>1. Talking down,  benzodiazepines,  antipsychotics</p>	<p>1. None</p>

# Impulse Control Disorders

## Learning Objectives

- Describe the presentation of intermittent explosive disorder, kleptomania, pyromania, gambling disorder, and trichotillomania
  - Describe the treatment approaches for impulse control disorders
- 

## Impulse Control

In impulse control disorders, patients are unable to resist a negative impulse. Before the act they have increased anxiety and after the act they feel a reduction in anxiety. Impulse control is mediated by the serotonergic system.

# Eating Disorders

## Learning Objectives

- List the diagnostic criteria for anorexia nervosa, bulimia nervosa, and binge eating disorder
  - Describe treatment approaches for the various eating disorders
  - List criteria for admission of a patient with an eating disorder
- 

## Anorexia Nervosa

**Definition.** Characterized by failure to maintain a normal body weight, fear and preoccupation with gaining weight and unrealistic self-evaluation as overweight. Subtypes are restricting (no binge-eating or purging) and binge-eating/purging (regularly engaged in binge-eating/purging).

**Risk Factors/Etiology.** Biologic factors are suggested by higher concordance for illness in monozygotic twins and the fact that amenorrhea may precede abnormal eating behavior. Psychologic risk factors include emotional conflicts concerning family control and sexuality. A cultural risk factor may be an emphasis on thinness.

**Prevalence.** 0.5%. Occurs at a 1:10 male-to-female ratio.

**Onset.** Average age is 17 years. Very late-onset anorexia nervosa has a poorer prognosis. Onset is often associated with emotional stressors, particularly conflicts with parents about independence, and sexual conflicts.

### Key Symptoms

- Restricted food intake and maintaining diets of low-calorie foods. Weight loss may also be achieved through purging (i.e., vomiting or taking



laxatives, diuretics, or enemas) and exercise.

- Great concern with appearance. Significant amount of time spent examining and denigrating self for perceived signs of excess weight.
- Denial of emaciated conditions
- With binge-eating/purging: self-induced vomiting; laxative and diuretic abuse

**Associated Symptoms.** Excessive interest in food-related activities (other than eating), obsessive-compulsive symptoms, depressive symptoms

**Course.** Some individuals recover after a single episode, and others develop a waxing-and-waning course.

**Outcome.** Long-term mortality rate of individuals hospitalized for anorexia nervosa is 10%, resulting from the effects of starvation and purging or suicide.

**Physical Examination.** Signs of malnutrition include emaciation, hypotension, bradycardia, lanugo (i.e., fine hair on the trunk), and peripheral edema. Signs of purging include eroded dental enamel caused by emesis and scarred or scratched hands from self-gagging to induce emesis. There may be evidence of general medical conditions caused by abnormal diets, starvation, and purging.

### Diagnostic Tests

- **Signs of malnutrition:** normochromic, normocytic anemia, elevated liver enzymes, abnormal electrolytes, low estrogen and testosterone levels, sinus bradycardia, reduced brain mass, and abnormal EEG
- **Signs of purging:** metabolic alkalosis, hypochloremia, and hypokalemia caused by emesis; metabolic acidosis caused by laxative abuse

**Treatment.** Initial treatment should be correction of significant physiologic consequences of starvation with hospitalization if necessary. Behavioral therapy should be initiated, with rewards or punishments based on absolute weight, not on eating behaviors. Family therapy designed to reduce conflicts about control by parents is often helpful. Antidepressants may play a limited role in treatment when comorbid depression is present.

**Differential Diagnosis.** Major rule-outs are bulimia nervosa, general medical conditions that cause weight loss, major depressive disorder, schizophrenia,

OCD, and body dysmorphic disorder.

# Personality Disorders

## Learning Objectives

- List the most common personality criteria and their diagnostic criteria
- 

# Personality Disorders

Personality disorders (PDs) are characterized by personality patterns that are pervasive, inflexible, and maladaptive. There are 3 clusters:

- **Cluster A:** peculiar thought processes, inappropriate affect
- **Cluster B:** mood lability, dissociative symptoms, preoccupation with rejection
- **Cluster C:** anxiety, preoccupation with criticism or rigidity

**Risk Factors/Etiology.** PDs are the product of the interaction of inborn temperament and subsequent developmental environment. Risk factors include innate temperamental difficulties, such as irritability; adverse environmental events, such as child neglect or abuse; and personality disorders in parents.

**Prevalence.** All are relatively common. More males have antisocial and narcissistic PDs, more females have borderline and histrionic PDs.

**Onset.** Usually not diagnosed until late adolescence or early adulthood

**Course.** Usually very chronic over decades without treatment. Symptoms of paranoid, schizoid, and narcissistic PD often worsen with age; symptoms of antisocial and borderline PD often ameliorate.

**Key Symptoms.** Long pattern of difficult interpersonal relationships, problems adapting to stress, failure to achieve goals, chronic unhappiness, low self-esteem

**Associated Diagnoses.** Mood disorders

**Treatment.** Psychotherapy is the mainstay of treatment. Intensive and long-term psychodynamic and cognitive therapy are treatments of choice for most PDs. Use of mood stabilizers and antidepressants is sometimes useful for Cluster B PDs.

**Differential Diagnosis.** Major rule-outs are mood disorders, personality change due to a general medical condition, and adjustment disorders.

## Cluster A

**Paranoid PD: Distrust and suspiciousness.** Individuals are mistrustful and suspicious of the motivations and actions of others and are often secretive and isolated. They are emotionally cold and odd.

A 57-year-old man living in a condominium complex constantly accuses his neighbors of plotting to avoid payment of their share of maintenance. He writes angry letters to other owners and has initiated several lawsuits. He lives alone and does not socialize.

**Schizoid PD: Detachment and restricted emotionality.** Individuals are emotionally distant. They are disinterested in others and indifferent to praise or criticism. Associated features include social drifting and dysphoria.

A 24-year-old man lives alone and works nights as a security guard. He ignores invitations from coworkers to socialize and has no outside interests.

**Schizotypal PD: Discomfort with social relationships; thought distortion; eccentricity.** Individuals are socially isolated and uncomfortable with others. Unlike Schizoid PD, they have peculiar patterns of thinking, including ideas of reference and persecution, odd preoccupations, and odd speech and affect. DSM-5 includes this PD in both psychotic disorders and personality disorders.

A 30-year-old man is completely preoccupied with the study and the brewing of herbal teas. He associates many peculiar powers with such infusions and says that plants bring him extra luck. He spends all of his time alone, often taking solitary walks in the wilderness for days at a time, collecting plants for teas. He

has no history of disorganized behavior. At times he believes that songs on the radio are about his life.

## Cluster B

**Histrionic PD.** Usually characterized by colorful, exaggerated behavior and excitable, shallow expression of emotions; uses physical appearance to draw attention to self; sexually seductive; and is uncomfortable in situations where he or she is not the center of attention.

A 30-year-old woman presents to the doctor's office dressed in a sexually seductive manner and insists that the doctor comment on her appearance. When the doctor refuses to do so, she becomes upset.

**Borderline PD.** Usually characterized by an unstable affect, mood swings, marked impulsivity, unstable relationships, recurrent suicidal behaviors, chronic feelings of emptiness or boredom, identity disturbance, and inappropriate anger. If stressed, may become psychotic. Main defense mechanism is splitting.

A 20-year-old nurse was recently admitted after reporting auditory hallucinations, which have occurred during the last few days. She reports marriage difficulties and believes her husband is to blame for the problem. She has several scars on her wrists and has a history of substance abuse.

**Antisocial PD.** Usually characterized by continuous antisocial or criminal acts, inability to conform to social rules, impulsivity, disregard for the rights of others, aggressiveness, lack of remorse, and deceitfulness. These have occurred since the age of 15, and the individual is at least 18 years of age.

A 22-year-old man was recently arrested after he set his mother's house on fire. He has had numerous problems with the law, which started at an early age when he was sent to a juvenile detention center for his behavior at both home and school. He lacks remorse for setting the fire and expresses a desire that his mother would have died in the fire.

**Narcissistic PD.** Usually characterized by a sense of self-importance, grandiosity, and preoccupation with fantasies of success. This person believes he is special, requires excessive admiration, reacts with rage when criticized, lacks empathy, is envious of others, and is interpersonally exploitative.

A famous actor is outraged when a director questions his acting abilities during rehearsal for a play. The actor responds by walking off the stage and not returning to the stage unless the director apologizes publicly for her behavior.

## Cluster C

**Avoidant PD.** Individuals have social inhibition, feelings of inadequacy, and hypersensitivity to criticism. They shy away from work or social relationships because of fears of rejection that are based on feelings of inadequacy. They feel lonely and substandard and are preoccupied with rejection.

A 43-year-old man dreads an upcoming company holiday party because he believes that he is incapable of engaging in social conversation or dancing. He believes that he will become an object of pity or ridicule if he attempts such things. He anticipates yet another lonely holiday.

**Dependent PD: Submissive and clinging behavior related to a need to be taken care of.** Individuals are consumed with the need to be taken care of. They have clinging behavior and worry unrealistically about abandonment. They feel inadequate and helpless and avoid disagreements with others. They usually focus dependency on a family member or spouse and desperately seek a substitute should this person become unavailable. Associated features include self-doubt, excessive humility, poor independent functioning, mood disorders, anxiety disorders, adjustment disorder, and other PDs.

A 26-year-old man is brought into the emergency room after sustaining severe rectal lacerations during a sadistic sexual episode with his partner. The patient is extremely concerned that the police not be informed because he doesn't want to upset his partner and cause the partner to leave.

**Obsessive-Compulsive PD.** Individuals are preoccupied with orderliness, perfectionism, and control. They are often consumed by the details of everything and lose their sense of overall goals. They are strict and perfectionistic, overconscientious, and inflexible. They may be obsessed with work and productivity and are hesitant to delegate tasks to others. Other traits include being miserly and unable to give up possessions. This PD should not be confused with OCD, a separate disorder. Associated features include indecisiveness, dysphoria, anger, social inhibition, and difficult interpersonal relationships.

A 37-year-old woman seeks psychotherapy as a result of an impending divorce. She states that her demands to keep the house spotless, to maintain an extremely detailed and fixed work and recreational schedule, and to observe rigid dietary habits have driven her spouse away.

# Normal Sleep and Sleep Disorders

## Learning Objectives

- Identify the normal sleep cycles
- Describe EEG, ENG, and physiologic phenomenon associated with each stage of sleep
- Categorize different sleep disorders and describe what is known about their causes

## Normal Sleep

Sleep is divided into 2 stages: nonrapid eye movement (NREM) and rapid eye movement (REM). There are numerous differences between them.

### NREM

NREM is a state of sleep characterized by slowing of the EEG rhythms, high muscle tone, absence of eye movements, and thoughtlike mental activity. The brain is inactive while the body is active. NREM is made up of 4 stages.

Table I-15-1. NREM

Stage	EEG Findings	Distribution
Stage 1	Disappearance of alpha wave and appearance of theta wave	5%
Stage 2	k complexes and sleep spindles	45%
Stage 3	Appearance of delta wave	12%
Stage		



## REM

REM is a stage of sleep characterized by aroused EEG patterns, sexual arousal, saccadic eye movements, generalized muscular atony (except middle-ear and eye muscles), and dreams. The brain is active and the body is inactive.

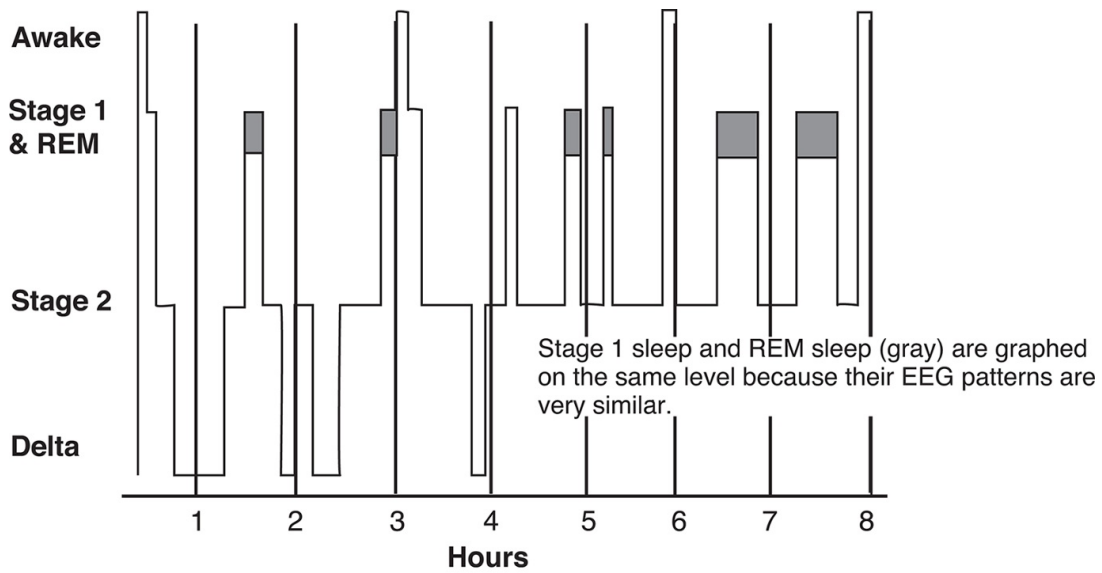
Table I-15-2. REM

Stage	EEG Findings	Distribution
REM	Bursts of sawtooth waves	25%

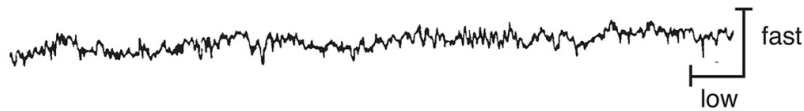
## Sleep Facts

Table I-15-3. Sleep Facts (Stage 2–REM)

Stage	Fact(s)
Stage 2	Longest of all the sleep stages
Stages 3 and 4	<ul style="list-style-type: none"> <li>• Also called slow wave or delta sleep</li> <li>• Hardest to arouse</li> <li>• Tends to vanish in the elderly</li> </ul>
REM	<ul style="list-style-type: none"> <li>• Easiest to arouse</li> <li>• Lengthens in time as night progresses</li> <li>• Increased during the second half of the night</li> </ul>



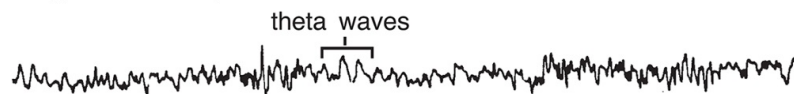
**A wake-low voltage-random fast-beta waves**



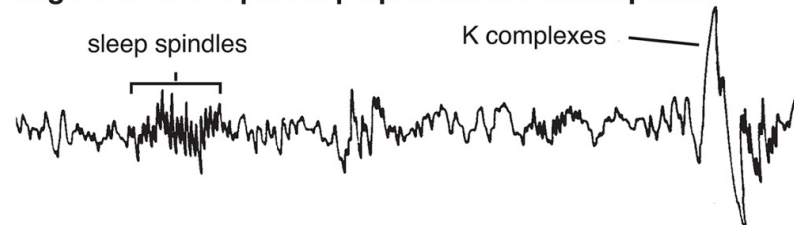
**Drowsy-8 to 12 cps-alpha waves**



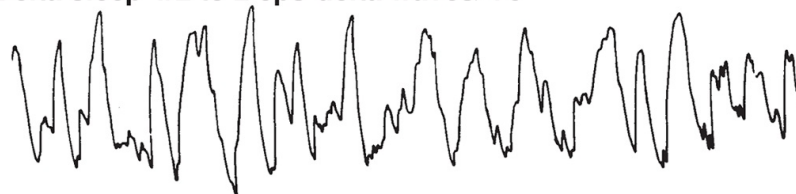
**Stage 1-3 to 7 cps theta waves**



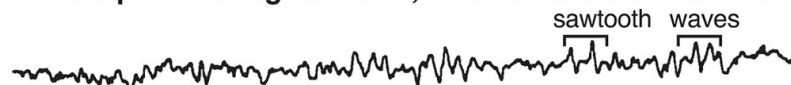
**Stage 2-12 to 14 cps-sleep spindles and K complexes**



**Delta sleep-1/2 to 2 cps-delta waves >75**



**REM sleep-low voltage-random, fast with sawtooth waves**



## Figure I-15-1. Sleep Architecture Diagram Showing Stages of Sleep in Sequence

**Sleep Latency.** The time needed before you actually fall asleep. Typically less than 15 minutes in most individuals; however, may be abnormal in many disorders, such as insomnia, etc.

**REM Latency.** The period lasting from the moment you fall asleep to the first REM period. Lasts approximately 90 minutes in most individuals. However, several disorders will shorten REM latency; these disorders include depression and narcolepsy.

### Characteristics of Sleep from Infancy to Old Age

- Total sleep time decreases.
- REM percentage decreases.
- Stages 3 and 4 tend to vanish.

### Neurotransmitters of Sleep

- **Serotonin:** increased during sleep; initiates sleep
- **Acetylcholine:** increased during sleep; linked to REM sleep
- **Norepinephrine:** decreased during sleep; linked to REM sleep
- **Dopamine:** increased toward end of sleep; linked to arousal and wakefulness

### Chemical Effects on Sleep

- **Tryptophan:** increases total sleep time
- **Dopamine agonists:** produce arousal
- **Dopamine antagonists:** decrease arousal, thus produce sleep
- **Benzodiazepines:** suppress Stage 4 and, when used chronically, increase sleep latency
- **Alcohol intoxication:** suppresses REM
- **Barbiturate intoxication:** suppresses REM
- **Alcohol withdrawal:** REM rebound
- **Barbiturate withdrawal:** REM rebound
- **Major depression:** shortened REM latency, increased REM time,

suppression of delta, multiple awakenings, and early morning awakening

# Human Sexuality

## Learning Objectives

- Present epidemiologic information about masturbation and homosexuality
  - List the types of sexual dysfunction and differentiating factors
  - Describe paraphilic disorder and gender dysphoria
- 

## Sexuality

**Sexual identity** is based on the person's sexual characteristics, such as external and internal genitalia, hormonal characteristics, and secondary sexual characteristics. **Gender identity** is based on the person's sense of maleness or femaleness and is established by age 3. **Gender role** is based on the external behavioral patterns that reflect the person's inner sense of gender identity. **Sexual orientation** is based on the person's choice of a love object: heterosexual (opposite sex), homosexual (same sex), bisexual (both sexes), or asexual (no sex).

# Psychopharmacology

## Learning Objectives

- Describe the classes of drug, mechanism of action, and common adverse effects of typical antipsychotic, atypical antipsychotic, antidepressant, mood-stabilizing, and anxiolytic medications
  - Describe the indications and procedural steps for electroconvulsive therapy
- 

## Antipsychotic Medication

Antipsychotic medications (APMs) are used to treat manifestations of psychosis and other psychiatric disorders. The precise mechanism of action is unknown; however, APMs block several populations of dopamine (D2, D4) receptors in the brain. The newer APMs also block some serotonin receptors (5HT), a property that may be associated with increased efficacy.

APMs also variably block central and peripheral cholinergic, histaminic, and alpha-adrenergic receptors.

There are 2 types of APMs:

- **Typical:** work mostly on dopamine receptors, treat the positive symptoms (hallucinations and delusions) and have many side effects (haloperidol, fluphenazine, chlorpromazine, etc.)
- **Atypical:** work mostly on dopamine and serotonin receptors, treat both positive and negative symptoms (flat affect, poor grooming, social withdrawal, anhedonia, etc), and have fewer side effects; always used as first-line agents (risperidone, olanzapine, etc.)

## Side Effects

There are several **general groups** of side effects.

**Sedation:** due to antihistaminic activity

**Hypotension:** effect due to alpha-adrenergic blockade and most common with low-potency APMs

**Anticholinergic Symptoms:** dry mouth, blurred vision, urinary hesitancy, constipation, bradycardia, confusion, and delirium

**Endocrine Effects:** gynecomastia, galactorrhea, and amenorrhea

**Dermal and Ocular Syndromes:** photosensitivity, abnormal pigmentation, cataracts

**Other Effects:** cardiac conduction abnormalities (especially with thioridazine), agranulocytosis with clozapine

There are several groups of side effects having to do with **movement**.

Acute Dystonia. (Dystonic Reaction).

- Presentation: spasms of various muscle groups
- Can be dramatic and frightening to patient
- Can be a major contributing factor to subsequent noncompliance with treatment
- Young men may be at higher risk, seen in 10% patients.
- Treatment: anticholinergics, such as benztropine, diphenhydramine, or trihexyphenidyl
- Can occur within hours after treatment

Akathisia

- Presenting Symptoms: motor restlessness, “ants in your pants”
- Differential Diagnosis: often mistaken for anxiety and agitation
- Treatment: lowering the dose, adding benzodiazepines or beta-blockers, switching to other antipsychotic medication
- Can occur several weeks after treatment

Tardive Dyskinesia (TD).

- Characterized by choreoathetosis and other involuntary movements
- Movements often occur first in the tongue or fingers and later involve the trunk.
- Etiology may be a form of “chemical denervation hypersensitivity,” which is caused by chronic dopamine blockade in the basal ganglia.
- Patients who take high doses of older antipsychotic medication for long periods of time are at highest risk, and movements gradually worsen with continued use.
- Treatment: Use newer antipsychotic medications.
- Seen more frequently in elderly females
- Can occur after 3–6 months after treatment

The **primary adverse effect** of antipsychotic medication use is neuroleptic malignant syndrome. It is a fairly rare and potentially life-threatening condition characterized by muscular rigidity, hyperthermia, autonomic instability, and delirium. CPK will be elevated.

- Usually associated with high dosages of high-potency antipsychotic medication.
- Treatment: Immediate discontinuation of the medication and physiologic supportive measures; dantrolene or bromocriptine may be used.



# Suicide

## Learning Objectives

- Describe the epidemiology and biological indicators associated with suicide and suicidal gestures
  - Describe the steps required to evaluate a patient's risk of suicide
- 

# Suicide

## Presentations

- Recent suicide attempt
- Complaints of suicidal thoughts
- Admission of suicidal thoughts upon questioning
- Demonstration of possible suicidal behavior

## Risk Factors for Suicidal Behavior

- History of suicide threats and attempts
- Perceived hopelessness (demoralization)
- Presence of psychiatric illness/drug abuse
- Males
- Elderly
- Social isolation
- Low job satisfaction
- Chronic physical illness

## Emergency Assessment

- Detain until the emergency evaluation is completed

- Take all suicide threats seriously
- Question about suicide ideation, intent, and plan
- Get information from third parties
- Don't identify with the patient
- Emergency treatment decisions about suicidal behavior are based on clinical presentation and presence of risk factors.

# Psychotherapies

## Learning Objectives

- Describe and compare the major forms of psychotherapy and behavioral therapy used in practice today

Table I-19-1. Psychotherapies

Type of Therapy	Goal	Selection Criteria	Duration	
1. Psychoanalysis	1. Resolution of neurosis	1. Psychologically minded	1. 4–5× per week for years	1.
1. Insight oriented	1. Focus on interpersonal goals	1. Intact reality testing, capacity for insight	1. 1–3× per week for months to years	1.
1. Supportive	1. Support reality testing, provide ego support	1. Healthy patients in time of crises or very ill patients	1. Days to months to years	1.

				1.
1. Behavioral	1. Modify learned behavior patterns	1. Those with maladaptive behaviors or psychophysiologic disorders	1. Time limited	
1. Group	1. Alleviation of symptoms, change relationships, alter family-couple dynamics	1. Groups target specific disorders, family and couples, personality disorders, etc.	1. 1× per week for weeks to years	1.
1. Cognitive	1. Change distorted views of self, world, and others	1. Depressive disorders	1. 1× per week for 15–25 weeks	1.

Part II

# Epidemiology & Ethics

# Epidemiology

## Learning Objectives

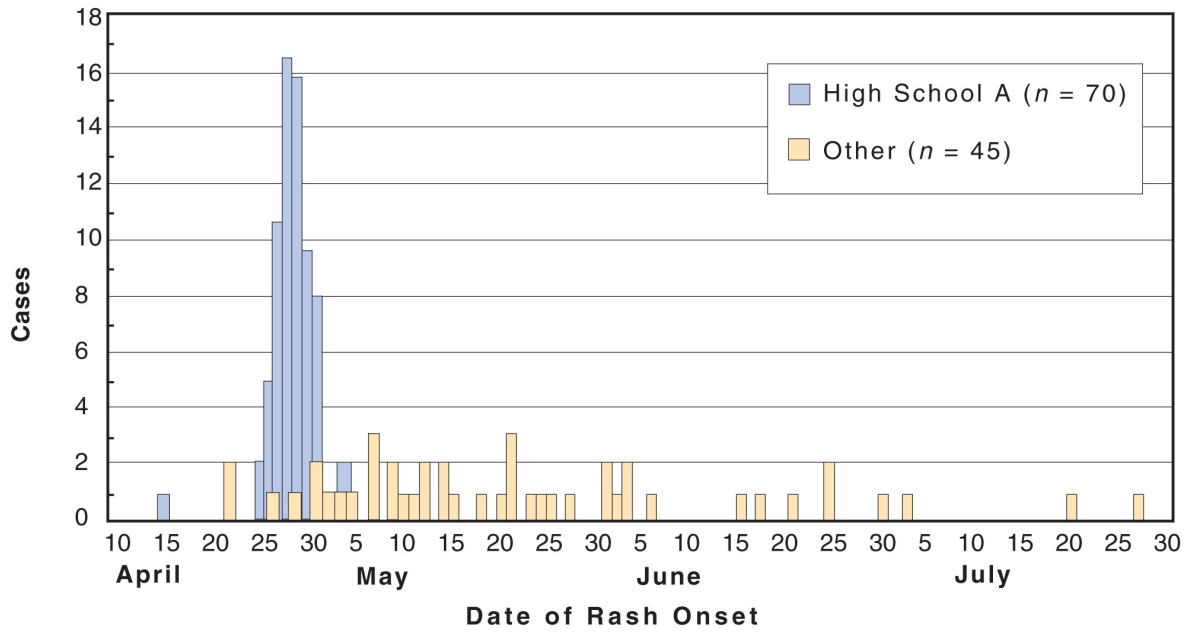
- Define incidence, prevalence, specific rates, adjusted rates, and other statistical measures, as they relate to morbidity and mortality
  - Perform survival analysis including accounting for potential life lost
  - Describe the types of prevention
  - Show how prevalence, sensitivity, and specificity relate to the value of screening tests
  - Answer questions about study design and bias in research
- 

## Overview

Epidemiology is the study of the distribution and determinants of health-related states within a population. It refers to the patterns of disease and the factors which influence those patterns.

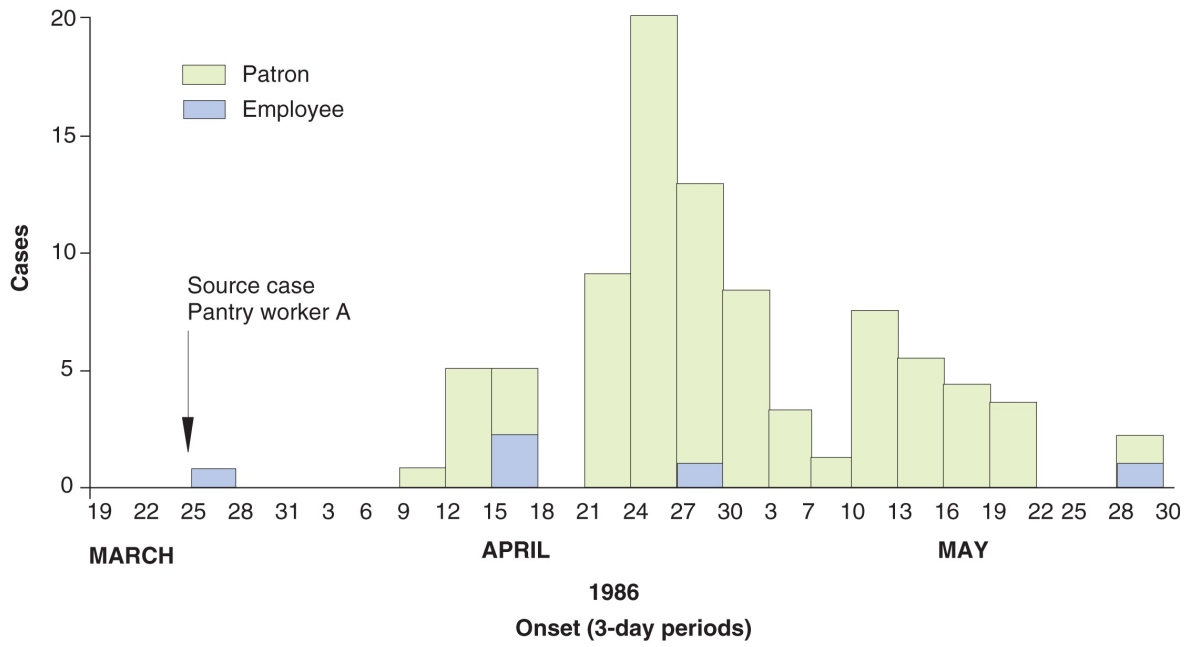
- **Endemic:** The usual, expected rate of disease over time; the disease is maintained without much variation within a region.
- **Epidemic:** Occurrence of disease in excess of the expected rate; usually presents in a larger geographic span than endemics (**epidemiology** is the **study of epidemics**).
- **Pandemic:** worldwide epidemic
- **Epidemic curve:** Visual description (commonly histogram) of an epidemic curve is disease cases plotted against time; classic signature of an epidemic is a **“spike” in cases during a period of time**.

**Incubation period** is the period of time from the point of infection to the onset of clinical illness.



Reported measles cases by date of rash onset, Elgin, Illinois, April 15 to July 28, 1985

Figure II-20-1. Measles Outbreak



Onsets of illness in patrons and employees: hepatitis A outbreak on a floating restaurant, Florida.  
**Figure II-20-2. Food-Borne Outbreak**



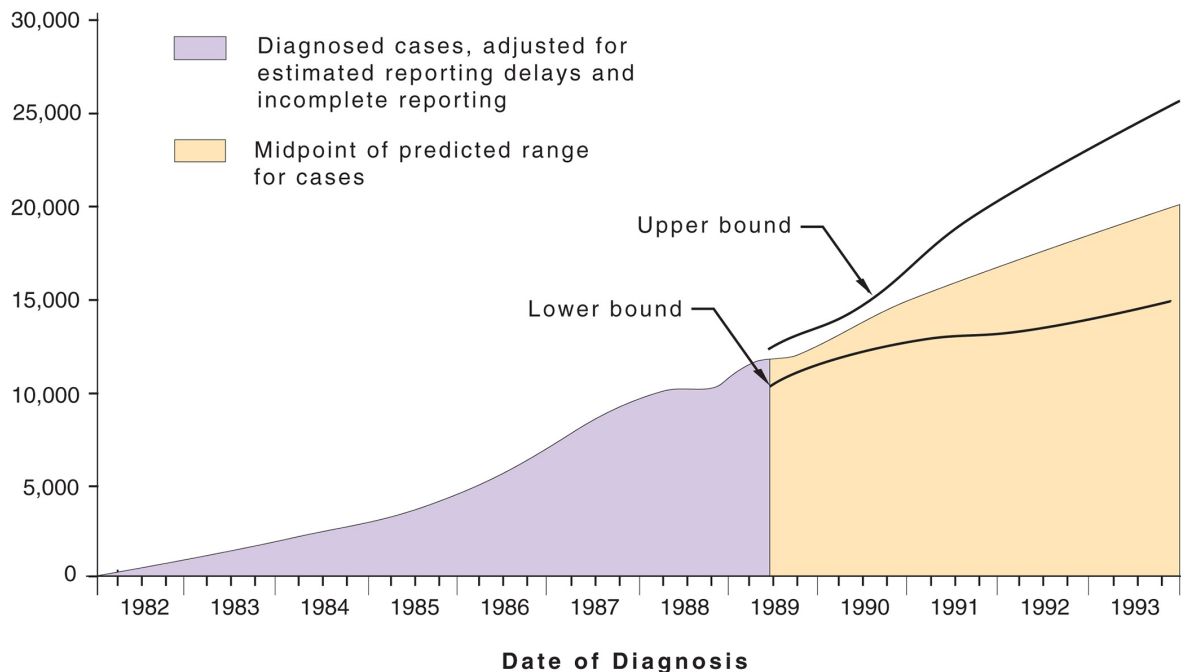


Figure II-20-3. Multiple-Year Increase in AIDS Cases in the United States

Health service interventions are evaluated using the following concepts/metrics:

- **Efficacy:** performance of an intervention under optimal conditions, e.g., prophylactic medications in a clinical trial
- **Effectiveness:** actual results in the real world, e.g., treatment outcomes in the community
- **Efficiency:** a ratio of the benefit compared to the cost associated with an intervention (high efficiency would deliver a greater benefit at minimal cost)

Upper and lower bounds account for uncertainty of the estimate (most commonly 95% confidence intervals).

# Biostatistics

## Learning Objectives

- List the basic principles of probability and describe the connection to statistics
  - Demonstrate how to calculate mode, mean, median, standard error, and standard deviation, and describe how they differ
  - Describe the purpose of inferential statistical tests, such as student T test, chi-square, and analysis of variance
  - Select an appropriate statistical test for a set of data to be analyzed
- 

## Probability

**Independent events** : the occurrence of one event does not affect the occurrence of another. For instance, the chance of a child being born with brown eyes is 0.75, and the chance of a child being born with blue eyes is 0.25. The eye color of the first-born child does not affect the eye color of the second-born.

- Calculate the probability of multiple independent events occurring by multiplying each individual probability together.
- For instance, the probability of having one child with brown eyes and one child with blue eyes is  $0.75 \times 0.25 = 0.1875$  (18.75%).

**Nonindependent events** : the occurrence of one event affects the occurrence of another. For instance, a box has 5 white and 5 black balls inside. When picking the first ball, the probability of white is 0.5 and black is 0.5. If the first ball is black, the probability of the second ball being white is  $5/9 = 0.56$  and black is  $4/9 = 0.44$ .

- Calculate the probability of multiple nonindependent events by multiplying each new probability, given that each previous event has occurred.

- For instance, the probability of choosing 2 black balls in a row followed by a white ball is  $5/10 \times 4/9 \times 5/8$ .

**Mutually exclusive events** : the occurrence of one event precludes the occurrence of another. For instance, if a coin flip lands heads, it cannot land tails.

- Determine the combined probability of mutually exclusive events by addition.
- For instance, the probability of a coin flip landing heads or tails is  $0.5 + 0.5 = 1.0$  (100%).

If events are not mutually exclusive, determine the combined probability (chance of either occurring) of two events by adding the two individual probabilities together and subtracting their product. For instance, the chance of having diabetes is 10% and the chance of being obese is 30%. Therefore, the chance of meeting someone who is diabetic or obese is  $0.1 + 0.3 - (0.1 \times 0.3)$ .

Combine probabilities for **mutually exclusive events by addition**. Mutually exclusive means that the occurrence of one event precludes the occurrence of the other (i.e., cannot both happen).

- If a coin lands heads, it cannot be tails; the two are mutually exclusive. So if a coin is flipped, the chance that it will be either heads or tails is  $0.5 + 0.5 = 1.0$  (or 100%).
- If 2 events are not mutually exclusive, the combination of probabilities is accomplished by adding the two together and subtracting out the multiplied probabilities. If the chance of having diabetes is 10%, and the chance of someone being obese is 30%, the chance of meeting someone who is obese or had diabetes is  $0.1 + 0.30 - (0.1 \times 0.30) = 0.37$  (or 37%).

# Ethics

## Learning Objectives

- Identify some important Supreme Court cases related to medical ethics, and explain their significance
  - Distinguish between the ethical and legal principles, and explain how they affect medical practice
- 

## Selected Important Court Cases

### **Karen Ann Quinlan: Substituted Judgment Standard**

In the Quinlan case, Karen Ann was in a persistent vegetative state, being kept alive only by life support. Karen's father asked to have her life support terminated according to his understanding of what Karen Ann would want. The court found that "if Karen herself were miraculously lucid for an interval . . . and perceptive of her irreversible condition, she could effectively decide upon discontinuance of the life support apparatus, even if it meant the prospect of natural death."

The court therefore allowed termination of life support, not because the father asked, but because it held that the father's request was most likely the expression of Karen Ann's own wishes.

**Substituted judgment** begins with the premise that decisions belong to the competent patient by virtue of the rights of autonomy and privacy. In this case, however, the patient is unable to decide, and a decision-maker who is the best representative of the patient's wishes must be substituted. In legal terms, the patient has the right to decide but is incompetent to do so. Therefore, the decision is made for the patient on the basis of the best estimate of his or her subjective wishes.

The key here is not who is the closest next of kin, but who is most likely to represent the patient's own wishes.

### **Brother Fox (*Eichner vs Dillon*): Best Interest Standard**

The New York Court of Appeals, in its decision of *Eichner vs Dillon*, held that trying to determine what a never-competent patient would have decided is practically impossible. Obviously, it is difficult to ascertain the actual (subjective) wishes of incompetents.

Therefore, if the patient has always been incompetent, or no one knows the patient well enough to render substituted judgment, the use of substituted judgment standard is questionable, at best.

Under these circumstances, decisions are made for the patient using the **best interest standard**. The object of the standard is to decide what a hypothetical "reasonable person" would decide to do after weighing the benefits and burdens of each course of action.

Note here the issue of who makes the decision is less important. All persons applying the best-interest standard should come to the same conclusions.

### **Infant Doe: Foregoing Lifesaving Surgery, Parents Withholding Treatment**

As a general rule, parents cannot withhold life- or limb-saving treatment from their children. Yet, in this exceptional case they did.

Baby Boy Doe was born with Down syndrome (trisomy 21) and with a tracheoesophageal fistula. The infant's parents were informed that surgery to correct his fistula would have "an even chance of success." Left untreated, the fistula would soon lead to the infant's death from starvation or pneumonia. The parents, who also had 2 healthy children, chose to withhold food and treatment and "let nature take its course."

Court action to remove the infant from his parents' custody (and permit the surgery) was sought by the county prosecutor. The court denied such action, and the Indiana Supreme Court declined to review the lower court's ruling. Infant Doe died at 6 days of age, as Indiana authorities were seeking intervention from the U.S. Supreme Court.

This case is simply an application of the best-interest standard. The court agreed with the parents that the burdens of treatment far outweighed any expected benefits.

### ***Roe vs Wade (1973): The Patient Decides***

Known to most people as the “abortion legalizing decision,” the importance of this case is not limited to its impact on abortion.

Faced with a conflict between the rights of the mother versus the rights of the putative unborn child, the court held that in the first trimester, the mother’s rights are certainly paramount, and that states may, if they wish, have the mother’s rights remain paramount for the full term of the pregnancy.

Because the mother gets to decide, even in the face of threats to the fetus, by extension, all patients get to decide about their own bodies and the health care they receive. In the United States, the locus for decision-making about health care resides with the patient, not the physician.

Note that courts have held that a pregnant woman has the right to refuse care (e.g., blood transfusions) even if it places her unborn child at risk.

### **Tarasoff Decision: Duty to Warn and Duty to Protect**

A student visiting a counselor at a counseling center in California states that he is going to kill someone. When he leaves, the counselor is concerned enough to call the police but takes no further action. The student subsequently kills the person he threatened. The court found the counselor and the center liable because they did not go far enough to warn and protect the potential victim.

The counselor should have called the police and then should also have tried in every way possible to notify the potential victim of the potential danger.

In similar situations, first try to detain the person making the threat, next call the police, and finally notify and warn the potential victim. All 3 actions should be taken, or at least attempted.

# Interpretation of Medical Literature

## Learning Objectives

- Critique a journal article, i.e., assess whether appropriate statistical tests were used, what biases or assumptions were inherent in the research study design, and what class of evidence was presented
- 

## Introduction

The purpose of this chapter is to provide you with an approach to reading and understanding research articles and pharmaceutical advertisements. It is based on principles of epidemiology.

An understanding of these concepts is fundamental to the comprehension of medical literature. We have sacrificed depth for the sake of brevity since our goal was to provide a few fundamental tools and avoid complexity

Part III

# **Patient Safety and Quality Improvement**



# Clinical Applications of Patient Safety and Quality Improvement

## Learning Objectives

- Define the principles of patient safety, system-based practice, and continuous quality improvement
  - Recognize and classify the different types of medical error
  - Describe the types of reporting systems which can identify and analyze medical errors
- 

## Principles of Patient Safety

Case: Within the past 2 years, a major tertiary care referral hospital experiences separate cases of a blood transfusion reaction due to incompatibility, 2 inpatient falls leading to significant injury, a wrong-site surgery, and a medication-dosing error resulting in a patient death.

- What is the most probable single underlying cause behind these medical errors?

### **Systems failures due to the complexity of health care delivery**

Health care is not a single system, but rather multiple systems which all interact. These clinical microsystems are defined as a group of clinicians and staff working together with a shared clinical purpose to provide health care for a population of patients. Individual health care organizations contain multiple microsystems which evolve over time. It is the complexity of these systems that predispose patients to harm from medical error.

Health care in the United States is capable of achieving incredible results for even the most severely ill patients. However, it does not do so reliably and consistently. Medical errors plague our health delivery systems. In 1999, the Institute of Medicine (IOM) estimated that 44,000–98,000 patients die each year in the United States from preventable medical errors ; some of the more recent estimates report an even higher rate of death. In addition to the toll that this takes in the form of human suffering, medical errors also represent a significant source of inefficiency and increased cost in the health care system.

The causes of these adverse events are not usually from people intentionally seeking to harm patients, but rather from the complexity of the health care system together with the inherent capability for human error. The causes of these errors are varied and can include failures made in administering medication, performing surgery, reporting lab results and making a diagnosis, to name a few. The most severe of these medical errors are referred to as **sentinel events**. A sentinel event is an adverse event in which death or serious harm to a patient has occurred; it usually refers to an event that is not at all expected or acceptable (e.g., operating on the wrong patient or wrong body part, abduction of an infant from a hospital, patient suicide while admitted to the hospital). The choice of the word *sentinel* reflects the severity of the injury (e.g., amputation of the wrong leg) and the likelihood that investigation of such an event will reveal serious problems in current policies or procedures.

It is unacceptable for patients to suffer preventable harm caused by a health care system whose purpose is to provide healing and comfort. Improving patient safety is the responsibility of every health care professional and requires a comprehensive team effort. Collectively, health care needs to learn from past errors (e.g., root cause analysis) and develop systems of care which prevent future errors from harming patients (e.g., checklists, electronic health records, structured communication).

Systems in health care delivery can be redesigned to **make it difficult for health care personnel to do the wrong thing** and **easier for them to consistently do the right thing**.

# Population Health Management

## Learning Objectives

- Define population health and value-based care
  - Describe how population health management principles can be put into practice
- 

## Defining Population Health

What is population health?

Case example: A 65-year-old woman presents to the emergency department at 3:00 AM with the acute onset of an asthma attack. She is treated with steroids and nebulizer treatments to stabilize her respiratory status. This is the third such presentation in the past 9 months. During her course of treatment it becomes evident that the patient is not able to get time off from work to see her primary care physician during clinic hours, did not receive an influenza vaccination this year, and continues to smoke 1 pack of cigarettes per day.

- What population health approaches can help this patient?

**Address the day-to-day factors present at home which impact the patient's health outcomes with asthma**

Health care in the United States has traditionally focused on the management of acute medical problems such as trauma, myocardial infarction, and stroke. Incredible advances have been made in these areas and outcomes from acute presentation of disease have steadily improved over the years, with outcomes among some of the best observed in any health system in the world.

However, the health care system here has lagged significantly in the area of disease prevention and health maintenance. Major disparities in access to preventative care services such as prenatal care, cancer screening and diabetes management; together with social inequalities with respect to patient education and income; as well as persistent individual behaviors such as poor diet, lack of exercise and cigarette smoking have contributed to the very poor overall health status observed in the United States.

### **BIG GEMS** (mnemonic for determinants of health)

- **B**ehavior
- **I**ncome
- **G**enetics
  
- **G**eography
- **E**nvironment
- **M**edical care
- **S**ocial-cultural

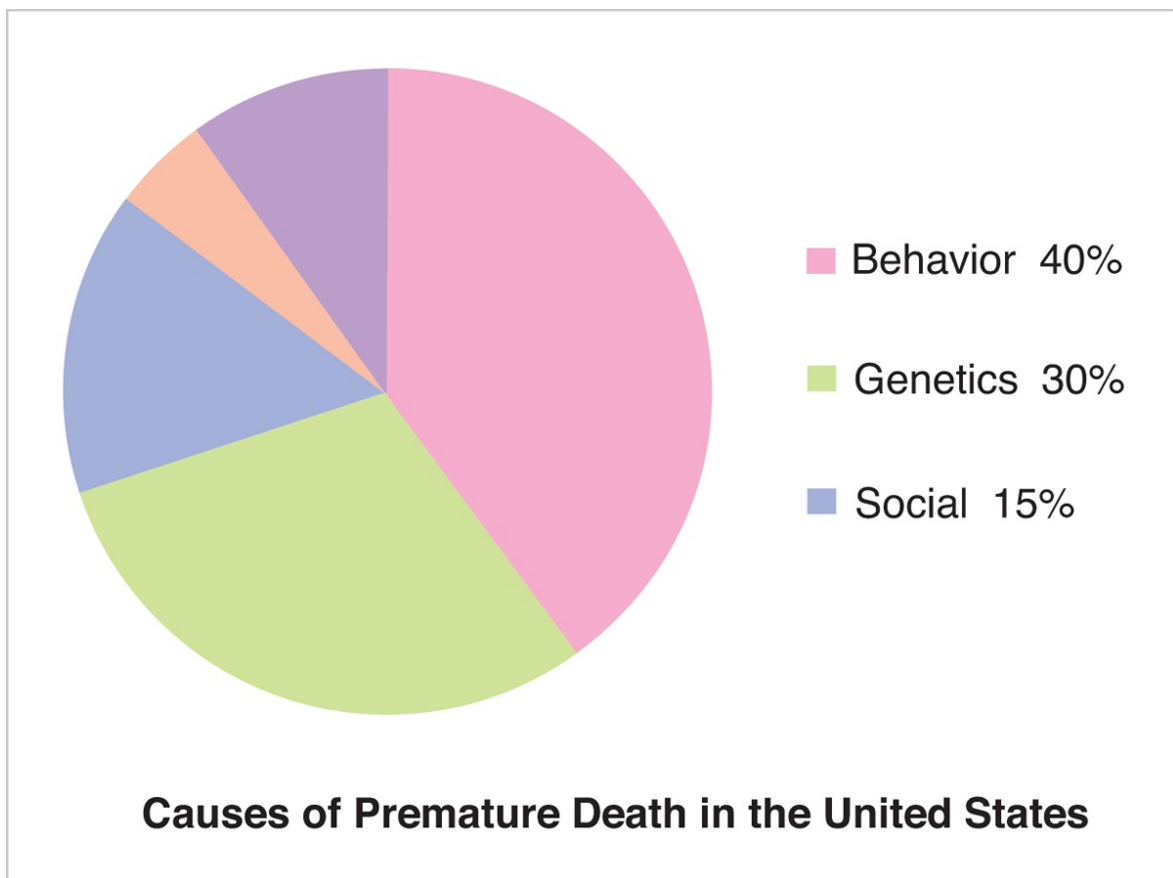
Problems with quality and variations in health delivery that do not follow evidence-based standards further erode the value of patient care. Ironically, the United States spends more on health care than any other nation in the world, yet ranks among the lowest in health measures, compared to other developed nations. Furthermore, the current rate of health care spending in the United States is unsustainable.

Population health is an approach to health care that addresses both individual and public health concerns in order to achieve optimal patient results. It is an approach to patient care which understands that health is influenced by several factors outside of traditional health care delivery models, including (but not limited to) social, economic, and environmental factors.

Population health management is fundamental to the transformation of health care delivery. Its principles recognize the importance of focusing attention not only on improving individual patient care, but also on improving the health of an entire population. In fact, direct health care accounts for only a small proportion of premature deaths in the United States.

- For example, the leading causes of premature death—smoking (435,000 deaths/year), obesity (400,000 deaths/year), and alcohol abuse (85,000

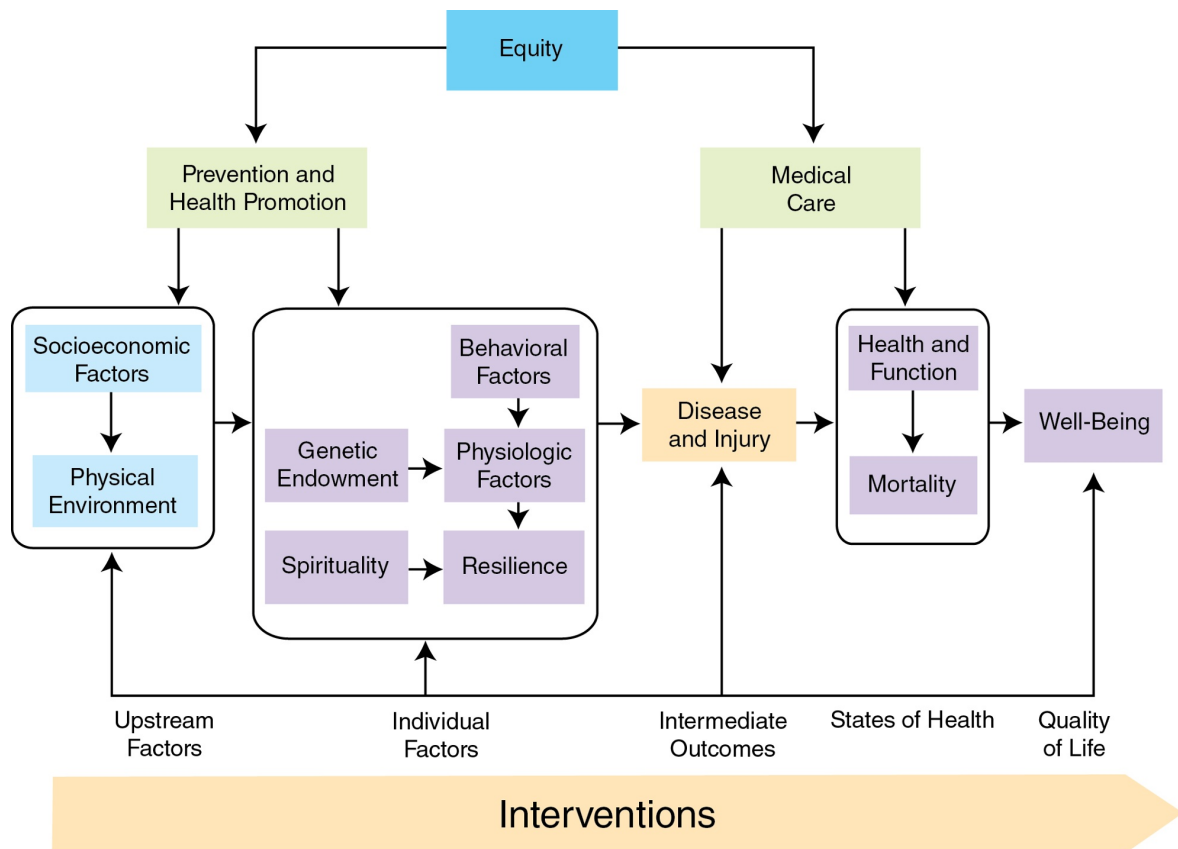
deaths/year)—are all preventable through interventions driven by population health management.



Population health management is, in effect, about coordinating care and improving access in order to enhance patient/family engagement and reduce variation in care to achieve better long-term outcomes at a reduced cost. The Institute for Healthcare Improvement (IHI) lists improving the health of the population as one of the 3 dimensions of its Triple Aim approach to optimizing health system performance.

### **IHI Triple Aim:**

- Improve the patient experience of care (including quality and satisfaction)
- **Improve the health of populations**
- Reduce the per capita cost of health care



Source: Adapted from Stiefel M, Nolan KA. Guide to Measuring the Triple Aim: Population Health, Experience of Care, and Per Capita Cost. IHI Innovation Series white paper. Cambridge, Massachusetts: Institute for Healthcare Improvement; 2012. (Available on [www.IHI.org](http://www.IHI.org))

### IHI Population Health Composite Model

Population health management focuses on high-risk patients who are responsible for the majority of health care utilization while simultaneously addressing preventative and chronic care needs of the entire population. One of the first steps in this process is to define the target population (e.g., a hospital or clinic’s entire service area or any subset, whether economic, geographic or demographic, or individuals with certain health conditions). Another important step is to identify the specific health status and needs of that group and deploy interventions and prevention strategies to improve the health of the group. The interventions target individuals, but they affect the entire population.

The incorporation of technology (e.g., electronic health records) and innovations in health care (e.g., digital home health monitoring) provide the infrastructure to support efforts in successful population health management. A key factor for the success of population health programs is automation, as managing populations can be highly complex. Technology-enabled solutions are essential to the efficient management of a program.

Let's say a primary care clinic is interested in improving population health for its diabetic patients.

- First, the clinic analyzes the patient registry generated by its electronic health record to identify high-risk type 2 diabetic patients who are not compliant with their medication and who frequently fail to keep their clinic appointments.
- Next, those patients are offered enrollment in a home hemoglobin A1c monitoring program, using a system which digitally records hemoglobin A1c levels taken in the home and then electronically transfers the results to the clinic.
- The system sends an alert to the clinical team when patients' hemoglobin A1c levels are consistently higher than a predetermined threshold.
- A nurse coordinator contacts these patients by phone to help manage medication compliance, answer patient questions, and encourage timely follow-up with clinic visits.
- A nutritionist works with patients to encourage healthy dietary choices, while a social worker addresses any financial constraints to following medical recommendations.

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